

REMARKS

INTRODUCTION

In accordance with the foregoing, reconsideration of the pending claims is respectfully requested.

Claims 1-16 are pending, and with claims 5-13 having been withdrawn from consideration, claims 1-4 and 14-16 are under consideration.

REJECTION UNDER 35 USC 103

Claims 1-3 and 14-16 stand rejected under 35 USC 103 as being obvious over Misso et al., U.S. Patent No. 6,424,488, in view of Scuricini, U.S. Patent No. 4,096,988, and Bernstein et al., U.S. Patent No. 6,501,045. This rejection is respectfully traversed.

By way of review and as an example, independent claim 1 sets forth:

" [a] disc balancing device which balances a disc comprising:

a disc assembly having a driving source, wherein the disc is rotatably disposed at the driving source;

a displacement measurement unit measuring vibration in the rotation of the disc assembly;

a phase angle measurement unit measuring a phase angle from a reference point of the disc assembly in the rotation of the disc assembly;

an operation/control unit calculating an eccentric mass and an eccentric position of the disc assembly, by using the biased vibration measured in the displacement measurement unit and the phase angle measured in the phase angle measurement unit; and

a laser cutter moving to track and to laser-cut a side portion of the disc corresponding to the eccentric position, while the disc is not rotating, according to the eccentric mass information from the operation/control unit, wherein the eccentric mass of the disc assembly is balanced to reduce vibration in the rotation thereof."

Independent claim 14 at least includes, with differing scope and breadth, a similar "laser cutter moving to cut a portion of the disc corresponding to the measured eccentric portion, while the disc is not rotating."

The Office Action sets forth that Misso et al. discloses all the claimed features except for the claimed "phase angle measurement unit measuring a phase angle from a reference point of the disc assembly in the rotation of the disc assembly" and "operation/control unit calculating an eccentric mass and an eccentric position of the disc assembly, by using the biased vibration measured in the displacement measurement unit and the phase angle measured in the phase angle measurement unit," of independent claim 1. The Office Action further stipulates that Misso et al. fails to disclose a laser moving to track and cut a portion of a corresponding disc while the disc is not rotating, as set forth in independent claims 1 and 14, with differing scope and breadth.

To disclose the claimed phase angle measurement unit and operation/control unit of claim 1, the Office Action sets forth that Scuricini discloses "an apparatus for the dynamic balancing of rotating bodies comprising a disk assembly (14) having a driving source (1) as shown in Figs. 2 and 3; a displacement measurement unit (4, 15 as shown in Fig. 3) for measuring vibration in the rotation of the disc assembly; a phase angle measurement unit (18, signal generator, as shown in Fig. 3) measuring an angular position of the rotating body; an operation/control unit (8) collecting [data from] the displacement measurement unit and phase angle measurement unit; and a laser cutter (12) for removing a certain amount of the material from the mass eccentricity analyzed by the operation/control unit (see also col. 5, line 39 to col. 6, line 25). Scuricini also teaches that the vibration is caused by the mass eccentricity and removed the certain amount of the material from the mass eccentricity at the positions specified in lines 39-54 of col. 5."

After listing the features the Office Action proffers Scuricini discloses, the Office Action merely concludes that, therefore, it would have been obvious to incorporate the same into Misso et al. "for balancing a disc stack of Misso et al. by a phase angle measurement unit and an operation/control unit as taught by Scuricini in order to achieve proper balance of the disc stack."

However, it is respectfully submitted that the Office Action has failed to present a proper prima facie obviousness case. The Office Action has failed to link the purported benefits of the features in Scuricini with Misso et al. There is no discussion of any motivation why one skilled in the art would completely change the monitoring system of Misso et al. and substitute for it the system of Scuricini. There is no evidence in the record supporting the conclusion that one skilled in the art would appreciate the need or desire to make such a modification. Further, the systems would appear to be directed toward different balancing environments, i.e., a more planar disc balancing in Misso et al. and the three dimensionally oriented centrifuge of Scuricini.

In addition, as noted in the Office Action, Misso et al. is directed toward adding a peripheral disc ring to the outer circumference of the disc, separate from the disc, and removing a portion of the peripheral disc to balance the disc(s). Similarly, Scuricini would only appear to disclose the same addition of a foreign material to the outer circumference of the rotating body, i.e., the annular belt or ring 14. Thus, even in combination the two references fail to disclose the claimed cutting of the actual disc.

As noted above, the Office Action further notes that Misso et al. fails to disclose the claimed cutting of the disc when the disc was stopped.

This would appear to be counter to what is directly disclosed in Scuricini, i.e., Scuricini details that "[t]he advantages offered by the method and apparatus according to this invention are numerous and considerable; particularly it is possible to balance a flexible and deformable body while it is rotating at high speed within its own frame...Another advantage consists in the possibility of reducing the time and cost required for the balancing operation, which can be carried out by driving, only few times or even once, the body up to the high speed." Scuricini in col. 4, lines 24-51. Thus, Scuricini particularly points out that it is preferential for the rotating body to be balanced while rotating.

With this teaching from Scuricini, it is respectfully submitted that there must be some countering evidence in the record explaining why, regardless of the conventional preference of balancing the body while rotating, one skilled in the art would now do the opposite and perform the balancing by stopping the disc, i.e., inherently adding more time and potentially more cost.

The Office Action relies on Bernstein et al. to disclose the stopping of the disc and performing the balancing operation. The Office Action cites col. 1, line 66 to col. 2, line 5, as support. This portion of Bernstein et al. is merely a portion of the Summary of Bernstein et al., while Bernstein et al. would merely appear to be broadly directed toward machining a workpiece with a laser. However, both Misso et al. and Scuricini would not appear to limit the use of lasers to only being operated when the rotating body is stopped. Both references discuss the use of lasers. Further, it would appear that any stopping of a machined piece in Bernstein et al. is only for the particular benefit of the preferred machining operation in Bernstein et al. and may not be applicable to all machining operations.

In addition, it is briefly noted again that the Office Action still has failed to provide support in the record as to why one skilled in the art would operate directly on the disc rather than a circumferential foreign surface, as done in both Misso et al. and Scuricini.

Regardless, it is respectfully submitted that any stopping operation of Bernstein et al. is not immediately applicable to Misso et al. or Scuricini, alone or in combination.

Further, the Office Action has merely recited what features are disclosed in Bernstein et al. and failed to provide evidence of the applicability to Misso et al. or Scuricini, alone or in combination. The Office Action merely concludes that it would be obvious to modify both references, in combination, "in order to machine the workpiece of the mechanical features to archive a desired profile."

However, it is respectfully submitted that this general motivation would not appear sufficient, in light of both Misso et al. and Scuricini appearing to disclose the opposite.

Further, MPEP § 2142 states that "[w]hen the motivation to combine the teachings of the references is not immediately apparent, it is the duty of the Examiner to explain why the combination of the teachings is proper." The Examiner is required to present actual evidence and make particular findings related to the motivation to combine the teachings of the references. In re Kotzab, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000); In re Dembiczak, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). Broad conclusory statements regarding the teaching of multiple references, standing alone, are not "evidence." Dembiczak, 50 USPQ2d at 1617.

The Examiner must explain the reasons that one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious. In re Rouffet, 47 USPQ2d 1453, 1459 (Fed. Cir. 1998).

In addition, it is well settled that "the Board [and Examiner] cannot simply reach conclusions based on [their] own understanding of experience - or on [their] assessment of what would be basic knowledge or common sense. Rather the Board [and Examiner] must point to some concrete evidence in the record in support of these findings." In re Zurko, 258 F. 3d 1379, 1386, 59 USPQ2d 1693, 1697 (Fed. Cir. 2001). See also In re Lee, 277 F. 3d 1338, 1344-45, 61 USPQ2d 1430, 1434-35 (Fed. Cir. 2002), in which the court required evidence for the determination of unpatentability by clarifying that the principles of "*common knowledge*" and "*common sense*" may only be applied to the analysis of evidence, rather than be a substitute for evidence. The court has also recently expanded their reasoning on this topic in In re Thrift, 298 F. 3d 1357, 1363, 63 USPQ2d 2002, 2008 (Fed. Cir. 2002).

Accordingly, a prima facie obviousness rejection requires evidenced motivation from something in the record that would lead one skilled in the art to combine the relevant teachings, again noting that the mere fact that the prior art may be modified in a particular manner does not make the modification obvious unless the prior art suggested the desirability of that modification.

Thus, without additional evidenced motivation in the record, it is respectfully submitted that the proffered reasoning for modifying Misso et al. and Scuricini is insufficient to support a prima facie obviousness case.

The required motivation must include some link between the cited features the Examiner is attempting to modify into the underlying reference. There must be a reason, other than only the recited benefit of that feature as detailed in that reference, for modifying the underlying reference. Here, Bernstein et al. only generally discusses machining of workpieces. There would not appear to be any reason to derive from that disclosure that each and every machining of workpieces must/should be performed while the workpiece is stopped. This would appear to be a feature and operation particular to the system of Bernstein et al.

Thus, it is respectfully submitted that one skilled in the art would not have modified Misso et al., Scuricini, and Bernstein et al. as proffered. In addition, it is respectfully submitted that the outstanding rejections fail to support a prima facie obviousness case for the same.

Therefore, for at least the above, it respectfully requested that this rejection of claims 1-3 and 14-16 be withdrawn and claims 1-3 and 14-16 be allowed.

Claim 4 stands rejected under 35 USC 103 as being obvious over Misso et al., Scuricini, and Bernstein et al., in view of Duston et al., U.S. Patent No. 3,538,298. This rejection is respectfully traversed.

The Office Action relies on Duston et al. to disclose a photosensor as the phase angle measurement unit by irradiating light to a reference point and receiving a reflection light from the disc assembly.

Similar to above, the Office Action would appear to merely conclude that the addition of the strobe light of Duston et al. would have been obvious, without providing sufficient motivation for the combination. The Office Action states that the motivation is: "in order to machine the workpiece of the mechanical feature to achieve the desired profile."

This motivation does not explain why the strobe light of Duston et al. is needed or desired in the combination of Misso et al., Scuricini, and Bernstein et al. There is no evidence that this feature would even be applicable to the modified references.

Further, in Duston et al., the relied upon photosensor is related to the operation of a strobe light illuminating "one or more sequentially numbered bands circumscribing one or both ends of the rotating unit, incidental with the strobe light, that is, appear to stand still in the light, indicate the location of the heaving side of the rotating unit." Duston et al. in col. 1, lines 40-45.

This strobe light method of Duston et al. would appear to be rudimentary compared to the detailed calculation driven disclosure of Scuricini. In addition, the already modified Misso et al., in view of Scuricini, would appear to be more detailed and particular, while the strobe light method of Duston et al. would appear to be less detailed and, presumably, less accurate. Further, it is not clear whether Scuricini, modified into Misso et al., already has a system performing this operation, so the modified combination may not need the strobe light of Duston et al.

Thus, for at least the above, it is respectfully submitted that it would not have been obvious to modify the combination of Misso et al., Scuricini, and Bernstein et al., as proffered in the Office Action. In addition, it is respectfully submitted that the rejection has failed to present a prima facie obviousness case.

Therefore, it is respectfully requested that this rejection be withdrawn and claim 4 be allowed.

CONCLUSION

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

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By: 

Stephen Boughner
Registration No. 45,317

1201 New York Avenue, NW, Suite 700
Washington, D.C. 20005
Telephone: (202) 434-1500
Facsimile: (202) 434-1501